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NOTES AND LITERATURE

ANIMAL STRUCTURE AND HABITS

PROFESSOR R. HESSE and Professor F. Dofflein have undertaken the preparation of a general work on the structure and habits of animals, of which the first volume¹ has just appeared. This volume deals in a most complete way with the animal as an independent organism and the authors reserve for subsequent treatment the consideration of animals in relation to their environment. After an introduction which deals with life, protoplasm, the cell, animals and plants, the theory of descent, etc., the subject matter of the volume follows in four books dealing with the statics and mechanics of the animal body, its metabolism, powers of reproduction and inheritance, and the nervous system and sense organs. A final section takes up the relation of the parts of the animal to the whole. As a sample of the thoroughness with which the subject is treated the contents of the first book may be taken. This part opens with an account of the shapes and movements of the unicellular animals followed by a consideration of these aspects of the multicellular forms. The skeleton in the invertebrates and vertebrates is fully described. The power of animals to float in water and in air is next considered, and the remainder of the book is given over to a presentation of locomotion proper. This includes movements by cilia and by muscles and under the head of muscular locomotion is considered locomotion by steps such as is seen in leeches, etc., by wriggling as seen in snakes, eels, etc., and by means of lever appendages. This last section includes swimming by appendages, springing, running, climbing and flying, and the last of these is discussed in relation to insects, bats and birds. The treatment is rich in examples and abounds in well-constructed diagrams and clear illustrations. The remaining sections of the book are equally full and exhaustive.

The subject matter, though often complicated, is treated in an

¹“Tierbau und Tierleben in ihrem Zusammenhang betrachtet,” von R. Hesse und F. Dofflein, Band I., *Der Tierkörper als selbständiger Organismus* von R. Hesse. Leipzig und Berlin, B. G. Teubner, 1910, 8vo, xvii + 789 pp., 480 figs., 15 Taf.

unusually clear way and is free from unnecessary technicalities; in fact the treatment may be said to be popular in the best sense of the word. This perhaps is the reason the book has been set in Gothic instead of Roman type, a fact which will appeal to the average German reader, though perhaps not to those outside Germany. The material is thoroughly modern without, however, involving the reader in present-day disputed questions, and in some respects the volume may be looked upon as a rewriting of the ground covered by Bergmann and Leuckart's "*Anatomisch-physiologisch Uebersicht des Tierreiches.*" To this work the author acknowledges much indebtedness and appropriately dedicates his volume to its authors. In the revival of interest in the study of form and function Professor Hesse's volume should find its place on the book shelf of every zoologist.

G. H. PARKER.

PLANT PHYSIOLOGY¹

DR. KAUFFMAN has published a very interesting paper on the influence of various substances on the sexual and other characters of certain species of Saprolegniaceae. Thorough studies of this kind are likely to add much to our knowledge of the biology of the fungi and will eventually, no doubt, furnish a mass of data which may be of material aid in the solution of some of the fundamental problems of evolution and variation.

One notable advance made by the author is the use of pure cultures obtained from single zoospores. A very successful and apparently simple method of obtaining the single spore cultures is described. It consists in making dilutions of zoospores in sterile water and sprinkling them with a pipette on the surface of a gelatine plate where they can be located with the microscope, and when they have germinated, they may be transferred to other plates or tubes.

The author does not state how many generations of each organism were grown from the same original single zoospore culture under the same conditions. We infer from his account, however, that in most cases the transfers were made from portions of the mycelium or gemmæ and were in the nature of vegetative reproductions rather than new generations.

¹"A Contribution to the Physiology of the Saprolegniaceae, with Special Reference to the Variation of the Sexual Organs," C. H. Kauffman (*Annals of Botany*, No. 87, Vol. 22, p. 361, July, 1908).